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10/071,143	02/07/2002	Volker Rheinberger	IVb17US	3534

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John C. Thompson
69 Grayton Road
Tonawanda, NY 14150

EXAMINER

LAMB, BRENDA A

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/07/143

Applicant(s)

Rheinberger et al

Examiner

LAMB

Group Art Unit

1734

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☒ Responsive to communication(s) filed on 2/07/2002, 10/21/2002
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-16 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-16 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☒ All ☐ Some* ☐ None of the:
- ☒ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. _____
- ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 2/07/2002 ☐ Interview Summary, PTO-413
- ☒ Notice of Reference(s) Cited, PTO-892 and 10/21/2002 ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948 ☐ Other _____

Office Action Summary

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Spray device works the applied material in an unpolymerized condition.

The disclosure is objected to because of the following informalities: At page 8 line 3 of the specification applicant has referred to the shield as element number 22 yet it is clear from the drawings it is element number 28. Appropriate correction is required.

Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear what the spray device in claim 1 encompasses given in claim 1 that applicant appears to be claiming that the spray device applies the material onto a base, substantially continuously polymerizes the applied material and works the applied material in an unpolymerized condition yet claim 3 claims the spray device is not irradiated but clearly the part of the spray device which substantially polymerizes the applied material, the light source, is exposed to irradiation. The term "wax-like" as it refers to the dental material in claim 5 is confusing since it is unclear whether one or not one is claiming the material is a wax. The term "wax-like" as it refers to the polymerizable substance in claim 9 is confusing since it is unclear whether or not one is claiming the material is a wax material.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 4, 8, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchinono et al.

Uchinono et al teaches a method for producing a synthetic material by spraying using a spray coating apparatus comprised of the following steps: spraying a material having at least a polymerizable synthetic material onto a base in proceeding layers wherein the viscosity of the applied material is such that working of the upper surface of the applied material is provided by a scraper, a part of the spray coating apparatus, occurs to smooth its upper surface such that resulting layer has the same thickness as

previously formed layers, and polymerizing the applied material. The examiner has interpreted the term "spray device" as being as an association of elements which permit working and spraying of the unpolymerization material and then polymerization and hardening of the applied material before application of subsequent layer and Uchinono et al has taught elements which are obviously operatively associated in a process which spray the material (spray nozzle), work the unpolymerization material (doctor blade) and then polymerization and harden the applied material before application of subsequent layers (light source). See Uchinono et al's second embodiment and eight embodiment. If applicant desires to claim that the nozzle 10 and light source 22 function as a unit as in Figure 4, it suggested that applicant at line 7 of claim 1 after "continuously polymerized by insert -- a light source mounted on --. With respect to claim 4, Uchinono et al teaches in the eight embodiment that each of the layers of the synthetic material part other than the bottommost and topmost layer is polymerized to a degree which is less than complete throughout the given layer yet supports the retention of the next layer applied thereon. With respect to claim 13, Uchinono et al teaches in the eight embodiment that the outermost or top layer and first or bottom most layer have the same material composition. With respect to claim 14, Uchinono et al teaches in the second and eight embodiments the step of spraying and the step of hardening results in the formation of a three dimensional objects from a three dimensional printing process. With respect to claim 3, Uchinono et al fails to teach the spray device is irradiated by the light source and thereby reads on the negative limitation of the spray device not being irradiated. In any event, it would have been obvious that the spray nozzle of the

Uchinono et al spray coating apparatus would not have been irradiated by the light source due to the positioning of the light source relative to the spray device. With respect to claim, 8 Uchinono et al teaches in alternate embodiment thermally treating or heating the last applied unpolymerized layer after hardening step of the previous layer of the synthetic material part in order to facilitate smoothening the last applied unpolymerized layer (see Uchinono et al fourth embodiment). Therefore, it would have been obvious to modify the Uchinono et al process by providing a step of thermally treating the last applied unpolymerized layer after hardening step of the previously applied of the synthetic material part by providing a heating means for the taught advantage facilitate the smoothing step.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uchinono et al in view Modrek et al.

Uchinono et al is applied for the reasons. Uchinono et al fails to teach a poly addition of a material within scope of the claim. However, it would have been obvious that the Uchinono et al resin composition includes a material wherein at least partial polymerization of the composition since Modrek et al teaches stereolithographic composition includes compositions which require polymerization for material hardening (see Modrek et al at column 7 line 16 to column 9 line 20).

Claims 1-3, 7 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Almquist et al.

Almquist et al teaches a method for producing a synthetic material part by spraying using a spray coating apparatus comprised of the following steps:

spraying a material having at least a polymerizable synthetic material onto a base in succeeding layers wherein the viscosity of the applied material is such that working of the upper surface of the applied material by a doctor blade, a part of the spray coating apparatus, occurs to smooth its upper surface such that resulting layers has the same thickness as previously formed layers; and polymerizing the applied material using a light source in order to harden the just applied material. The examiner has interpreted the term "spray device" as being as an association of elements which permit working and spraying of the unpolymerization material and then polymerization and hardening of the applied material before application of subsequent layers. Almquist et al has taught elements which obviously have an operative association in the spray process device in order to successively perform the above cited steps. See Almquist et al disclosed ink jet recoating process discussed at column 22 line 5 to column 27 line 7. Note if applicant desires to claim that the nozzle 10 and light source 22 function as a unit as in Figure 4, it suggested that applicant at line 7 of claim 1 after "continuously polymerized by insert -- a light source mounted on --. With respect to claim 2, Almquist et al teaches the layer is applied in droplet form and upon contacting the surface to be coated the droplets flatten and merge. Almquist et al teaches mechanical working can be performed on the layer formed by droplets (see column 22 line to column 23 line 6). With respect to claim 7, Almquist et al. teaches at column 24 lines 18-34 the spray applied material is heated before spray applied to a temperature less than the polymerization temperature. With respect to claim 13, Almquist et al infers that each of the layers is constructed from the same building material or coating material. With

respect to claim 14, Almquist et al teaches the step of spraying and step of hardening results in the formation of three dimensional objects from three dimensional printing process. With respect to claim 3, Almquist et al fails to teach the spray device is irradiated by the light source and thereby reads on the negative limitation of the spray device not being irradiated. In any event, it would have been obvious that the spray nozzle of the Almquist et al apparatus would not have been irradiated due to movement of the spray nozzle away from the light source prior to irradiating step.

Claims 1-3, 6, 9 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamane et al 5,059,266.

Yamane et al teaches a method for producing a synthetic material part which is comprised of the following steps: spray applying with a spray coating apparatus a material having at a least a polymerizable synthetic material onto a base in succeeding layers wherein the viscosity of the Yamane et al material being applied obviously is capable of being worked by the spray device in order to apply it; and hardening at least one already applied layer prior to application of a subsequent layer. The examiner has interpreted the term "spray device" as being an association of elements such as the Yamane et al ink jet nozzle and light source which are obviously operatively associated in the process thereby providing the recited spray coating apparatus or spray device and the Yamane et al spray device provides the functions of spraying the synthetic material, polymerizing the synthetic material and hardening by curing the synthetic material to form a synthetic material part. Thus process claim 1 is obvious over Yamane et al. Note if applicant desires to claim that the nozzle 10 and light source 22

function as a unit as in Figure 4, it suggested that applicant at line 7 of claim 1 after "continuously polymerized by insert -- a light source mounted on --. With respect to claim 14, Yamane et al teaches the step of spraying includes spray applying a material in a three dimensional printing process and the step of hardening or curing includes hardening or curing the applied layers between application of the first and last layers. With respect to claim 6, Yamane et al teaches the material includes a poly addition material within scope of the claim (See column 5 lines 22-29). With respect to claim 9, Yamane et al teaches the spray applied material includes a material within scope of the claim (see column 5 lines 22-29 and column 8 line 44-59). With respect to claim 3, Yamane et al shows in his Figures that light or electromagnetic radiation from the light source is directed so as to avoid irradiation of the spray nozzle which is part of the spray coating apparatus. With respect to claim 13, Yamane et al teaches colors of each of layers may be varied. Therefore, it would have been obvious to control the plurality of Yamane et al ink jet nozzles such that the upper layer is more transparent than previously formed layer since Yamane et al teaches the color of the layer of the synthetic material is controllable dependent on desired end results. With respect to claim 2, Yamane et al teaches each layer is applied in droplet form and formed layer is capable of being mechanically loaded worked it desired.


Claims 5, 10, 11 and 15-16 are would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brenda Lamb whose telephone number is (571) 272-1231. The examiner can normally be reached on Monday thru Tuesday and Thursday-Friday with alternate Wednesdays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lamb/LR
March 17, 2004


BRENDA A. LAMB
PRIMARY EXAMINER